

Nonsurgical Management of Hyperadrenocorticism in Ferrets

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KEYWORDS

• Ferret • Adrenal disease • Leuprolide acetate • Deslorelin • Melatonin

KEY POINTS

- Medical management of hyperadrenocorticism in ferrets is a suitable alternative to adrenalectomy and in some cases may be preferable.
- Various drugs are available for the symptomatic management of the clinical signs of adrenal disease, with gonadotrophin-releasing hormone agonists being the most widely used.
- Although the drugs used treat just the symptoms and not the abnormal adrenal tissue, they seem to have few adverse effects and many can be used concurrently or in conjunction with surgical resection of the diseased adrenal gland.
- Timely recognition of the less commonly seen but potentially life-threatening clinical signs of urethral blockage secondary to prostatic disease and nonregenerative anemia secondary to hyperestrogenism is vital to the successful management of these conditions.

INTRODUCTION

Hyperadrenocorticism in ferrets, more commonly referred to as adrenal gland disease, is one of the most recognizable conditions in the domestic ferret. The clinical signs of this well-recognized syndrome are a result of hyperandrogenism, in which various sex steroids are overproduced. One case of hypercortisolism and 1 case of hyperaldosteronism in association with hyperandrogenism have been reported, but these variations of adrenal gland disorders may be also under-recognized and under-reported.^{1,2}

Clinical signs of hyperadrenocorticism include:

- Progressive and symmetric alopecia. Seen in more than 90% of affected ferrets³
- Pruritus
- Vulvar swelling in spayed females

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- Increased aggression or sexual behavior in spayed females and neutered males
- Stranguria in males secondary to urethral obstruction from prostatomegaly
- Anemia or pancytopenia (rare)

Although many of the aforementioned clinical signs are classic for adrenal disease and considered by some clinicians as pathognomonic for hyperadrenocorticism, the following diagnostic tests are recommended in the work-up of the condition:

- Adrenal hormone panel: measures serum levels of estradiol, androstenedione, and 17-hydroxyprogesterone. Available through the University of Tennessee Veterinary Medical Center Endocrinology Service (<http://www.vet.utk.edu/diagnostic/endocrinology>).³
- Abdominal ultrasound: evaluates the adrenal glands for enlargement and architecture abnormalities such as cysts or mineralization.⁴ In addition, compression or invasion of the vena cava by the right adrenal gland can be visualized on ultrasonographic examination. Prostatic enlargement may also be noted on ultrasonographic examination in some males.

Surgical resection of the diseased adrenal gland was considered the treatment of choice for many years, but the development of several effective medical therapies has changed the way many practitioners now treat this disease. Although these medical therapies help treat the symptoms of hyperadrenocorticism, they do not eliminate the presence of the adrenocortical neoplasms responsible for the increased androgens. Surgical resection allows for the removal of adrenal neoplasms, but can be associated with typical anesthetic and surgical risks. These surgical risks may outweigh the potential benefits, especially in debilitated or aged ferrets.⁵ The right adrenal gland's dorsal position on the caudal vena cava also makes it more difficult to remove than the left adrenal gland. In some cases, surgical resection is still the treatment of choice, especially in those ferrets that have concurrent conditions that benefit from surgical intervention.⁵ One such instance is ferrets that also have insulinomas, because removal of insulinomas has been shown to lead to longer disease-free intervals and survival times.⁶ Surgical resection of the diseased adrenal gland(s) is also indicated in those ferrets that have only a partial response to medical therapies or have become refractory to long-term use of hormone therapy for relief from their disease. There is also some anecdotal evidence that combined surgical debulking of a diseased adrenal gland with hormone therapy seems to result in longer survival times than either treatment modality alone.⁷ Even if both adrenal glands are diseased, complete removal of both is still not recommended because this leads to life-threatening hypoadrenocorticism.

There are several nonsurgical treatment modalities available for addressing the clinical signs associated with the excess sex hormones secreted by adrenocortical tumors in ferrets. Their specific methods of action are diverse and, in some cases, unpublished in ferrets. Following published data in other species, as well as in ferrets, can make many of these agents potentially helpful additions to the medical repertoire available to clinicians treating adrenal disease. Pregnant women should avoid direct contact with many of the drugs discussed in this article.

DRUGS USED TO PROVIDE GENERALIZED SYMPTOMATIC TREATMENT

Gonadotropin-releasing Hormone Agonists

When administered at sufficiently high levels for a prolonged period, gonadotropin-releasing hormone (GnRH) agonists desensitize GnRH receptors at the pituitary to downregulate the release of the gonadotropins follicle-stimulating hormone (FSH)

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